

# ARCHITECT'S CLINIC

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## How to treat ventilation problems

**Q** We recently insulated our attic, putting the insulation in the floor of the attic space. Since then we've found our bedroom, which is below it, very hot and stuffy and there's a little damp building on our window frames. Should we have had the insulation placed on the roof itself rather than the floor? What is the best way to proceed?

**A** THIS sounds like a ventilation issue to me and not an insulation issue. There are three main issues to deal with when you are upgrading the fabric of any building: insulation, air tightness and ventilation. You need to make sure that you have provided for all three in order to avoid these kinds of problems.

**Insulation:** It sounds like you have dealt with the insulation. By putting the insulation in line with the ceiling you have reduced the overall volume that you have to heat (this saves energy) and you have kept the insulation layer close to the area you want to keep warm (this makes it more efficient). There are two other aspects of insulation you should consider. First, make sure you avoid any gaps in the insulation — these are called thermal bridges and may lead to condensation problems. Second, make sure that you put the right amount of insulation in as there is a point beyond which the insulation is costing more than the energy saved. Get some advice on this.

**Air tightness:** The next thing you need to look at is stopping the warm air inside leaking out. This is called air tightness and it is achieved by using membranes, tapes and sealant to seal the gaps at windows and at the junctions with the floor and the roof. This is difficult to do comprehensively in an existing house but any gap sealed makes a more comfortable environment inside. The better the air tightness, the more efficient the ventilation will be.

**Ventilation:** Finally, you need a supply of fresh air to breathe, get rid of odours and also to control the water vapour that we produce with our bodies, cooking, and all the stuff we do in our homes. There are a number of low-tech, simple ventilation systems available and there

are also more complicated heat recovery systems. No matter what system you use, you want to make sure that it provides a whole house solution — that the system is designed so that it provides the right quantity of air, that it runs all the time and that it responds to demand for fresh air. It is also a bonus if it is easy to use.

As for the damp on the windows, you have provided insulation, if it feels stuffy there isn't too much air leakage, but the lack of ventilation can lead to a stuffy, overheated feeling and condensation on the windows.

In the short term you could open your windows in the morning or evening and flush out the air in the room. You could also install a trickle vent in the room — into the window frame or in the wall. The vent is cheap but getting it installed may be about €400.

In the longer term I would recommend a whole house demand-controlled ventilation system. This would cost about €1,500 plus installation but it depends on the size of your house. It involves installing inlet vents in the living and bedrooms and extract vents in the bathrooms and utility rooms. The extract vents are connected to a fan that pushes stale air out and fresh air is pulled in through the inlet vents.

You could install a mechanical heat recovery system. This will cost about €4,000 plus installation but again this depends on the size of your house and the quality of the air tightness. It is easier to install in a new build. The system has the same arrangement of inlets and extracts but they are all connected with air ducts to a central fan unit. As the warm stale air is pushed out of the house the system sucks the heat out of the extract air and heats the fresh air coming in. The heat never leaves the building.

It is important when you are upgrading to do the right thing but also to design it properly, so make sure you get some advice from a registered architect before you start.

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Advice is for guidance only and readers are advised to seek professional assistance for any proposed project.